

**EPA Superfund
Record of Decision:**

**MARINE CORPS LOGISTICS BASE
EPA ID: GA7170023694
OU 05
ALBANY, GA
02/11/1998**

EPA 541-R98-082

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW
ATLANTA, GEORGIA 30303-8909

CERTIFIED MAIL
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Commanding General
Marine Corps Logistics Base-Albany
Albany, Georgia 31704-1128

SUBJ: Record of Decision
Operable Unit 5
MCLB-Albany NPL Site
EPA ID# GA7170023694
Albany, GA 31704

Dear Sir:

The U.S. Environmental Protection Agency (EPA) Region 4 has reviewed the above subject decision document and concurs with No Further Response Action Planned decision for Operable Unit 5. This remedy is supported by the previously completed Remedial Investigation, Feasibility Study and Risk Assessment Report, as well as the Interim Remedial Action for the grit disposal areas at PSC 8. The remedy of No Further Response Action Planned is protective of human health and the environment.

EPA appreciates the coordination efforts of MCLB Albany and the level of effort that was put forth in the documents leading to this decision. EPA looks forward to continuing the exemplary working relationship with MCLB Albany and Southern Division Naval Facilities Engineering Command as we move toward final cleanup of the NPL site.

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RECORD OF DECISION
OPERABLE UNIT 5

MARINE CORPS LOGISTICS BASE
ALBANY, GEORGIA

Unit Identification Code: M67004

Contract No.: N62467-89-D-0317/079

Prepared by:

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November 1997

CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, ABB Environmental Services, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/079 are complete and accurate and comply with all requirements of this contract.

DATE: November 14, 1997

NAME AND TITLE OF CERTIFYING OFFICIAL: Kathleen Hodak
Task Order Manager

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(DFAR 252.227-7036)

**DECLARATION OF THE RECORD OF DECISION
NO FURTHER RESPONSE ACTION PLANNED**

SITE NAME AND ADDRESS

Marine Corps Logistics Base
Operable Unit 5
814 Radford Blvd
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STATEMENT OF PURPOSE AND BASIS

This Record of Decision (ROD) document presents the final response for Operable Unit (OU) 5 at the Marine Corps Logistics Base (MCLB) in Albany, Georgia. It was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act as amended by the Superfund Amendments and Reauthorization Act, and to the extent practicable, the National Oil and Hazardous Substances Contingency Plan (NCP). This decision is based on the site's Administrative Record, which is on file at the Environmental Branch Office, Facilities and Service Division, Building 5501, MCLB, Albany, Georgia 31704, and at the Information Repository in the Dougherty County Public Library, Albany, Georgia. Based on the review of this OU 5 ROD and previous documents, the U.S. Environmental Protection Agency (USEPA) Region IV and State of Georgia concur with the selected remedy.

ASSESSMENT OF THE SITE

OU 5 is located in the southwestern portion of the base and consists of two potential sources of contamination (PSCs): PSC 8, the Grit Disposal Area and PSC 14, the Domestic Wastewater Treatment Plant (DWTP), which was constructed in 1952. In 1977, an industrial wastewater treatment plant (IWTP) was constructed at MCLB, Albany to collect and treat wastes from various industrial shops located on base. These wastes received primary treatment at the IWTP to remove hazardous inorganic constituents. The IWTP effluent was then piped to the DWTP, mixed with domestic waste, and treated again prior to discharge to the Flint River. Because the DWTP received effluent from the IWTP, and the IWTP treated wastes from electroplating and aluminum coating conversion processes ([F-006 and F-019 wastes] 40 Code of Federal Regulations 261.31), the Georgia Environmental Protection Division (GEPD) determined that the sludge from the DWTP should also be classified as a hazardous waste. In April 1990, DWTP operations were halted and base wastewater was discharged to the city of Albany's publicly owned treatment works.

Southern Division, Naval Facilities Engineering Command prepared closure documents for the DWTP sludge drying beds in compliance with GEPD's Administrative Order No. EPD-HW-616, dated November 15, 1990. The implementation of the closure efforts, under the Resource Conservation and Recovery Act, began in May 1991 with background soil sampling and ended in 1994 with excavation of sludge drying bed material. The 10 sludge drying beds were issued a record of clean closure on October 20, 1995.

A remedial investigation and baseline risk assessment (RI/BRA) was conducted at OU 5 between 1994 and 1997. The field portion of the RI was conducted at OU 5 from March 1994 to November 1994. The RI at OU 5 indicated the presence of Aroclor - 1260 (a polychlorinated biphenyl (PCB)), polynuclear aromatic hydrocarbons (PAHs) and elevated concentrations of lead (up to 405 milligrams per kilogram [mg/kg]) primarily in the grit disposal trench area. The subsurface soil data indicated that no downward migration of these analytes had occurred at OU 5.

Following the review of RI data and the preparation of a preliminary risk evaluation, an interim

response action was deemed necessary to reduce the potential risks to human health and the environment posed by the PSC 8 surface and subsurface soils. A focused feasibility study (FFS), which was completed in April 1995, evaluated the following remedial alternatives: no action; capping; excavation, followed by off-base incineration and disposal; and excavation, followed by off-base stabilization and disposal in a Toxic Substance Control Act (TSCA) facility. Based on the results of this FFS, a Proposed Plan was published in April 1995 recommending the last alternative: excavation, followed by off-base stabilization and disposal in a TSCA facility. An Interim ROD was signed and an interim remedial action (IRA) design document was completed in June 1995.

Action (cleanup) levels were established for concentrations of PCBs, lead, and PAHs in the soil. The action levels chosen for the PSC 8 IRA were (1) 1 mg/kg for total PCBs, (2) 75 mg/kg for lead, and (3) 10 mg/kg for total PAHs. The IRA was implemented during the months of January and February 1996. Approximately 79 cubic yards of contaminated grit and soil were excavated and transported to Chemical Waste Management, Inc. (USEPA ID# ALD000622464), a TSCA-permitted landfill in Emelle, Alabama, for stabilization and disposal. Confirmatory samples were collected from the sidewalls and base of the excavated area to ensure that the remaining soil and/or grit were below the cleanup levels. Once the cleanup levels were satisfied, the trench area was restored by backfilling with clean soil and reseeding the area.

Following the IRA, human health risk assessments (HHRAs) and ecological risk assessments (ERAs) were performed using all USEPA Level IV data quality objective data collected during the RI and IRA confirmatory data. The risk assessments were performed on the following media: soil, surface water, sediment, and the sludge drying-bed soil. Exposure pathways considered for the human health portion of the BRA included ingestion, skin contact, and inhalation. Exposure scenarios included a current land use of a base worker at OU 5 and a theoretical future land use of residential development and associated utility construction at OU 5. The potential risks resulting from human exposure to surface and subsurface soil, sediment, and surface water were then calculated for each exposure scenario. The ecological portion of the BRA assumed that animals would be exposed directly to surface soil, sediment, and surface water, with additional exposure from eating other animals and plants that may contain stored contaminants.

According to the NCP for Superfund sites, the acceptable cancer risk range is from 1 in 10,000 (1×10^{-4}) to 1 in 1 million (1×10^{-6}) depending on site-specific conditions. Although the estimated risk of 1×10^{-6} is the point of departure in determining the need for a response action, site-specific conditions at OU 5 indicate that application of the acceptable risk range is appropriate. Site-specific conditions at OU 5 supporting use of the risk range include the base perimeter fence restricting public access to soils, surface water, and sediment; the industrial site conditions; and the low probability of receptor contact with contaminated soils. For noncancer risks, the similar point of departure is a hazard index (HI) greater than 1.

The results of the HHRA indicate that potential current and future land use cancer and noncancer risks at PSCs 8 and 14 are acceptable to USEPA Region IV. Cancer risks for current and future land use at PSCs 8 and 14 are 8×10^{-8} and 7×10^{-6} , respectively. These cancer risks do not exceed the USEPA acceptable cancer risk range of 1×10^{-4} to 1×10^{-6} . Noncancer risks for future land use at PSCs 8 and 14 are 0.1 and 0.7, respectively, and do not exceed an HI of 1. Based on the results of the BRA, no further response actions are planned for OU 5.

The ecological portion of the BRA (ERA) indicates that there is little risk of adverse effects to receptor species at PSCs 8 and 14. Only chromium was identified as potentially causing adverse effects to plants in the southwestern portion of PSC 8. Aluminum, chromium, vanadium, and possibly zinc were identified as potentially causing adverse effects to plants at PSC 14; however, it is likely that only chromium in the sludge drying beds and the drainage ditches would cause adverse effects to terrestrial plants. Maximum exposure concentrations of several metals (including aluminum, cadmium, thallium, vanadium, and zinc) contributed to a very low risk estimate for small, insectivorous birds. However, exposures to these metals are not likely to result in adverse effects.

DESCRIPTION OF THE SELECTED REMEDY

OU 5 is the fourth of six OUs to be completed at MCLB, Albany. All four completed RODs (OUs 1, 2, 3, and 5) address surface and subsurface soil, surface water, and sediment. This final response declares that a No Further Response Action Planned (NFRAP) decision be implemented at OU 5 for all soil, surface water, and sediment. Therefore, this response requires no further remedial treatment, containment, or land-use restrictions be implemented at PSCs 8 and 14.

STATUTORY DETERMINATIONS

The final response action proposed for OU 5 addresses the surface and subsurface soils, surface water, and sediment. Specifically, the final response for PSCs 8 and 14 is NFRAP because no further remedial action is necessary to protect human health and the environment. Because the remedy will not result in hazardous substances remaining onsite above health-based levels, the 5-year review will not apply to the action for PSCs 8 and 14.

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Marine Corps Logistics Base
Albany, Georgia

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
ARARs	applicable or relevant and appropriate requirements
bls	below land surface
BRA	baseline risk assessment
CFR	Code of Federal Regulations
CPC	chemical of potential concern
DQO	data quality objective
DWTP	domestic wastewater treatment plant
ERA	ecological risk assessment
EPC	exposure point concentration
FFA	Federal Facility Agreement
FFS	focused feasibility study
GEPD	Georgia Environmental Protection Division
HI	hazard index
IAS	Initial Assessment Study
IRA	interim remedial action
MCLB	Marine Corps Logistics Base
mg/kg	milligrams per kilogram
µg/kg	micrograms per kilogram
NA	No Action
NCP	National Oil and Hazardous Substances Contingency Plan
NFRAP	no further response action planned
NPL	National Priority List
OU	operable unit
PAH	polynuclear aromatic hydrocarbons
PCB	polychlorinated biphenyl
PSC	potential source of contamination
	registered trademark
RCRA	Resource Conservation and Recovery Act
RFI	Resource Conservation and Recovery Act (RCRA) Facility Investiga- tion
RI	remedial investigation
RI/FS	remedial investigation and feasibility study
RI/BRA	remedial investigation/baseline risk assessment
ROD	Record of Decision

GLOSSARY (Continued)

SOUTHNAV-	
FACENGCOM	Southern Division, Naval Facilities Engineering Command
SVOC	semivolatile organic compound
SWMU	solid waste management unit
TSCA	Toxic Substances Control Act
USEPA	U.S. Environmental Protection Agency
USMC	U.S. Marine Corps
VOC	volatile organic compound

1.0 SITE NAME, LOCATION, AND DESCRIPTION

Marine Corps Logistics Base (MCLB), Albany is an active facility occupying 3,579 acres east-southeast of the city of Albany, Georgia. Land bordering MCLB, Albany to the south, east, and northeast is primarily agricultural or recreational open space. Most of the land to the northwest and west of the base is residential and commercial.

Operable Unit (OU) 5 is located in the southwestern portion of the base, adjacent to the Marine Corps Canal. Figure 1-1 identifies the location of MCLB, Albany and the approximate location of OU 5, comprising Potential Sources of Contamination (PSCs) 8 and 14.

1.1 PSG 8. PSC 8 (the Grit Disposal Area; Figure 1-2) is undeveloped and measures approximately 350 feet by 120 feet. It is located southeast of the former Domestic Waste Water Treatment Plant ([DWTP], PSC 14) and was used between 1962 and 1979 for the disposal of material collected in the DWTP grit chamber. The grit material consisted of items such as sand, broken glass, nuts, bolts, and other dense, nonbiodegradable material.

A 1994 remedial investigation (RI) identified an approximate 30-foot-long trench and apparent spoil pile on the northern half of PSC 8. In January and February 1996, 79 cubic yards of contaminated material were excavated from the trench area for off-base treatment and disposal as part of an Interim Remedial Action (IRA). The trench was subsequently backfilled and regraded with clean soil and reseeded.

1.2 PSG 14. PSC 14 (Figure 1-2), the DWTP, was operated from 1952 to 1990, for the treatment of sanitary and pretreated industrial wastes generated at MCLB, Albany. PSC 14 includes a control building, a grit chamber (previously mentioned), primary and secondary settling tanks, two 120-foot diameter trickling filter tanks, an anaerobic digester, and 10 sludge drying beds. Wastewater was moved to, through, and from the DWTP via underground piping. PSC 14 is a grassy, open, 5-acre site surrounded by pecan groves, PSC 8, and pine forest with locally thick brush.

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

MCLB, Albany currently serves as a U.S. military logistics center controlling the acquisition, storage, maintenance, and distribution of combat and support material for the U.S. Marine Corps (USMC). In addition, the base is used for military training and other tasks and functions as directed by the Commandant of the USMC.

MCLB, Albany has generated various types of solid and liquid wastes over the years, including hazardous wastes. The hazardous wastes include electroplating wastes containing heavy metals, organic solvents from stripping and cleaning operations, and waste fuel and oil.

Beginning in 1985, three investigations were performed to assess and characterize PSCs identified at MCLB, Albany. These investigations included the 1985 Initial Assessment Study (IAS), the 1987 Confirmation Study, and the 1989 Resource Conservation and Recovery Act (RCRA) facility investigation (RFI). As a result of these investigations, MCLB, Albany was placed on the National Priority List (NPL) for Uncontrolled Hazardous Waste Sites (December 1989).

2.1 IAS. An IAS was conducted by Envirodyne Engineers, Inc., at MCLB, Albany in 1985 to identify and assess PSCs posing a potential threat to human health or the environment due to contamination from past hazardous material disposal practices. Eight PSCs (including PSC 8) were identified at MCLB, Albany based on historical data, aerial photographs, field inspections, and

personal interviews. All eight PSCs were evaluated to determine contaminant characteristics, migration pathways, and potential receptors (Envirodyne Engineers, Inc., 1985).

The primary pathways identified for migration of contaminants included erosion, surface water runoff, and groundwater transport. The predominant topographic slope at OU 5 is to the southwest, where surface water ultimately discharges to the Flint River via the Marine Corps Canal (Figure 1-1). The predominant direction of regional groundwater flow is west toward the Flint River, which is located approximately 2.7 miles from the base. Potential receptors identified include aquatic organisms in the receiving waters, predators and other animals relying on these areas for food and water, and humans using the Flint River for recreational purposes.

The IAS concluded that six of the eight PSCs (PSCs 1, 2, 3, 5, 6, and 7) warranted further investigation under the Navy Assessment and Control of Installation Pollutants program to assess long-term impacts. The primary recommendation of the study was to conduct a Confirmation Study to confirm or disprove the existence of the suspected contamination and to quantify the extent of any existing problems. Specifically, this Confirmation Study determined (1) whether or not a threat to human health or the environment existed, (2) the extent of contamination, and (3) the potential for contaminant migration.

2.2 CONFIRMATION STUDY. The Confirmation Study was conducted by McClelland Engineers at the MCLB, Albany facility in 1986 at nine PSCs: the six PSCs recommended for further evaluation by the IAS and three additional PSCs identified as potential threats to human health and the environment (PSCs 9, 10, and 11) (McClelland Engineers). Based on the Confirmation Study result, additional investigation was recommended for PSCs 1, 3, 6, 9, and 11. OU 5 was not included in the Confirmation Study.

2.3 RFI. Subsequent to the 1987 Confirmation Study, nine PSCs (PSCs 1, 2, 3, 5, 6, 7, 9, 10, and 11) were identified as solid waste management units (SWMUs) by the Georgia Environmental Protection Division (GEPD) in the Par B RCRA Permit for MCLB, Albany. Terms of this permit required that an RFI be conducted at each of the PSCs to determine the nature and extent of releases and the potential pathways of contaminant migration to the environment. Applied Engineering and Science, Inc., completed the RFI and submitted a final report in 1989. Of the nine PSCs studied in the RFI, only PSCs 7 and 9 did not require further investigation.

2.4 SLUDGE DRYING-BED CLOSURE DOCUMENTS. ABB Environmental Services, Inc. (ABB-ES), under contract with the Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), prepared closure documents for the DWTP sludge drying beds in compliance with Administrative Order No. EPD-HW-616 dated November 15, 1990, issued by the GEPD. The closure documents, which consist of a Closure Plan, a Contingency Postclosure Plan, and a Groundwater Monitoring Program Plan, were completed in July 1991 (ABB-ES, 1991). The plans were developed as part of the efforts to permanently close the DWTP, which potentially accumulated wastewater treatment sludges classified as F-006 and F-019 wastes listed under 40 Code of Federal Regulations (CFR) 261.31 (hazardous wastes from nonspecific sources).

Efforts to permanently close the sludge drying beds at the DWTP at MCLB, Albany were conducted in conformance with Section 391-3-11-.11(10) of the rules promulgated pursuant to the Georgia Hazardous Waste Management Act, Section 12-8-60, et seq. as amended, and RCRA, 40 CFR, Part 270, Subpart G, "Interim Status." Implementation of the closure efforts, under RCRA, began in May 1991 with background soil sampling, followed by monitoring well installation and groundwater sampling at the DWTP.

Background Samples. As part of confirmation soil sampling, eight background soil samples were collected by ABB-ES in the vicinity of the sludge drying beds during 1991 and 1992: four from an

October 1991 event and four more from a September 1992 sampling event. These samples were analyzed for Solid Waste Method 846 (SW-846) volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and metals.

Confirmation Soil Samples. As part of the efforts to verify "clean" closure at the DWTP sludge drying beds, three soil sampling events were performed from October 1991 to September 1992. The October 1991 soil sampling efforts also included sampling of the sludge drying-bed concrete structure, as described in the DWTP Closure Plan (ABB-ES, 1991). The analytical results and discussion of all confirmation soil sampling can be found in the Confirmation Soil Sampling Report (ABB-ES, 1993). All sampling procedures and analyses were in conformance with U.S. Environmental Protection Agency (USEPA) Level III data quality objectives (DQOs).

Postremoval Soil Sampling. Subsequent to the confirmation soil sampling, the top 8 inches of the material in sludge drying beds 1, 2, 3, 6, 9, and 10 were removed and disposed of at an RCRA-permitted facility. Verification soil samples were collected from the surface of each bed for VOCs, SVOCs, and specific metals analysis. Concentrations of the analytes were compared to concentrations in background samples, and no statistically significant differences were found with respect to metals concentration (ABB-ES, 1994).

2.5 RI/BASELINE RISK ASSESSMENT (BRA). In July 1991, the Department of the Navy, representing MCLB, Albany, entered into a Federal Facilities Agreement (FFA) with the GEPA and the USEPA, Region IV. The FFA established a procedural framework and schedule for developing, implementing, and monitoring appropriate response actions at the facility in accordance with the provisions of Comprehensive Environmental Response, Compensation, and Liability Act, RCRA, the National Oil and Hazardous Substances Contingency Plan (NCP), Superfund guidance and policy, and the Georgia Hazardous Waste Management Act.

The conclusions of the three previous investigations indicated a need for additional data collection over the entire installation. Between 1987 and 1991, the total number of PSCs to be investigated at MCLB, Albany increased to 24. Available data on the 24 PSCs were sufficient to indicate the requirement for a remedial response as described in the NPL to characterize the extent of contamination, assess releases, and develop responses. As a result of more recent investigations, two additional PSCs, 25 and 26, were identified, resulting in a total of 26 PSCs. According to the FFA, 14 of the PSCs require an immediate RI and feasibility study (RI/FS), 3 PSCs require RCRA investigations, while the remaining 9 PSCs require site-screening activities. As a result, ABB-ES was contracted under the Comprehensive Long-Term Environmental Action, Navy contract to prepare and execute RI/FS workplans, site-screening workplans, and associated planning documents for PSCs at MCLB, Albany.

Under the RI/FS process, groups of PSCs are defined as OUs due to their proximity, similarity of waste, and similarity of investigative techniques or potential response actions. OU 5, consisting of PSCs 8 and 14, was developed due to the close proximity of the two PSCs, similarity of contamination, and its use as a former municipal wastewater treatment facility by the installation. The final draft RI/BRA report for OU 5 was released in June 1997. The results and scope of the RIs at OU 5 are presented below.

2.5.1 Scope of RI The RI defined the nature and extent of contamination in surface and subsurface soil, surface water, and sediment at OU 5. These investigations were conducted in two phases. The first phase of investigation included a geophysical survey, soil gas survey, Geoprobe investigations, and an in-line video camera inspection of the DWTP pipelines. The geophysical survey was used to determine the vertical and horizontal extent of disposal trenches, locate buried metallic objects, and identify areas of previously disturbed or excavated soil. The soil gas survey was used to identify in situ organic vapors of selected volatile compounds that may have settled into the subsurface soil. The Geoprobe was used to

sample and analyze subsurface soil for contamination from 3 to 22 feet below land surface (bls). The video camera inspection of the DWTP pipelines was used to locate possible breaks that might have allowed wastewater to leak into the surrounding soils.

The second phase of the RI consisted of surface soil sampling (zero to 12 inches bls), soil borings and subsurface soil sampling (1 to 57 feet bls), grit material sampling, and collection of one surface water and sediment sample. The objective of these activities was to determine if contamination exists and to determine if contaminants have migrated from their original location. Background sampling was also conducted to provide site-specific data on naturally occurring elements in MCLB, Albany soil and organic constituents commonly found along roadsides or in developed areas. Analytical results from this RI are presented in Chapter 5.0 of this Record of Decision (ROD).

PSC 8: Five surface soil samples (08S001 through 08S005) plus a duplicate sample of 08S001 were collected at PSC 8 (Figure 2-1). Additionally, one surface soil sample (08S006BK) was collected at PSC 8 for PSC-specific background data. Four soil borings (08B001BK through 08B004), including one PSC-specific background soil boring, were advanced at PSC 8 during the 1994 field confirmatory investigation. Two subsurface soil samples were typically collected from each boring. In addition, 15 subsurface soil samples (08B005 through 08B021) were collected within the trench-and-spoil pile area at PSG 8 as part of the 1996 IRA to confirm cleanup (Note: 08B018 and 08B019 were collected but not analyzed during the IRA). The soil at three of these sampling locations (08B00904, 08B01401, and 08B01501) was excavated during the 1996 IRA. Soil borings were completed from 30 to 57 feet bls, including the background soil boring, which was completed to 40 feet bls. Two grit composite samples (08U01 and 08U02) and a duplicate sample (08U01D) were collected within the shallow trench at PSC 8. The grit samples were composited from zero to 4 feet bls. The media at both grit disposal sample locations were eventually excavated during the IRA. No surface water or sediment was present at PSC 8 during the RI.

PSC 14: Seventeen surface soil samples (14S001 through 14S0016) and one duplicate sample (14S008D) were collected from the DWTP area. Additional surface soil samples were collected from within two grass-lined drainage swales (14S01 and 14S02) adjacent to the DWTP sludge drying beds. All locations are indicated on Figure 2-1. 14S014BK was collected as a background sample. Fourteen soil borings (14B001 through 14B015), including one PSC-specific background soil boring (14B012BK), were advanced at PSC 14 at the locations indicated on Figure 2-1 (Note: No samples were collected from 14B006 due to difficulties during drilling operations.). Two subsurface soil samples were typically collected from each boring. Soil borings were completed to 48 feet bls except for the background soil boring, which was completed to 40 feet bls. One surface water sample (14W01), a duplicate sample (14W01D), and one sediment sample (14D01) were collected from PSC 14 at the location indicated on Figure 2-1.

Laboratory tests were conducted on samples of surface soil, subsurface soil, grit, surface water, and sediment from OU 5. Samples were analyzed in onsite labs and in federally approved off-site labs. Samples, with few exceptions, were analyzed for VOCs, SVOCs, pesticides and polychlorinated biphenyls (PCBs), and inorganic constituents.

2.6 OU 5-RELATED DOCUMENTS. The following reports are available for review by the public at Dougherty County Public Library in Albany, Georgia, and at the MCLB, Albany Environmental Branch office. These reports describe the detailed methodology and results of investigations at OU 5.

ABB-ES. 1991. Closure and Contingency Post-Closure Plan for the Sludge Drying Beds at the Domestic Wastewater Treatment Plant, Marine Corps Logistic Base. Albany, Georgia (July).

ABB-ES. 1993. Confirmation Soil Sampling Report for the Sludge Drying Beds at the DWTP, MCLB Albany, Georgia (March).

ABB-ES. 1993. Remedial Investigation/Feasibility Study (RI/FS) Workplan for Operable Unit Five (OU 5), MCLB Albany, Georgia (November).

ABB-ES. 1993. Sampling and Analysis Plan for OU 5, MCLB Albany, Georgia (November).

ABB-ES. 1994. Technical Memorandum, OU 5, MCLB Albany, Georgia (May).

ABB-ES. 1994. Preliminary Risk Evaluation, OU 5, MCLB Albany, georgia (December).

ABB-ES. 1994. Verification Soil Sampling Report for the DWTP Sludge Drying Beds, MCLB, Albany, Georgia (December).

ABB-ES. 1995. Focused Feasibility Study, PSC 8, OU 5, MCLB Albany, Georgia (April).

ABB-ES. 1995. Proposed Plan for PSC 9 IRA, OU 5, MCLB Albany, Georgia (April).

ABB-ES. 1995. Record of Decision, Interim Remedial Action for PSC 8, OU 5, MCLB Albany, Georgia (June).

ABB-ES. 1995. Interim Remedial Action Design for PSC 8, OU 5, MCLB Albany, Georgia (June).

ABB-ES. 1997. Final Draft Remedial Investigation/Baseline Risk Assessment for OU 5, MCLB Albany, Georgia (Kay).

ABB-ES. 1997. Proposed Plan for OU 5, MCLB Albany, Georgia (September).

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3.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

The Proposed Plan for OU 5 recommends no further response action planned (NFRAP) for all surface soil, subsurface soil, surface water, and sediment. This document is available to the public in the Information Repository located at the Dougherty County Public Library and in the Administrative Record located at the Environmental Branch Office, Building 5501, MCLB, Albany, Georgia, 31704-1128. The public notice of the Proposed Plan was published in the Albany Herald on October 7, 1997; the MCLB, Albany newspaper, The Emblem, in October of 1997; and was announced on several local radio stations. The public comment period for the Proposed Plan was October 6 to November 4, 1997. A public meeting was held on October 16, 1997, at the Human Resources Building, Building 3010, MCLB, Albany. At this meeting, representatives from SOUTHNAVFACENGCOM; MCLB, Albany; USEPA Region IV; GEPD; and ABB-ES were available to discuss all aspects of OU 5 and the response actions under consideration. A Community Relations Responsiveness Summary, identifying all community participation at OU 5, is included as Appendix A.

4.0 SCOPE AND ROLE OF THE FINAL RESPONSE AT OU 5

MCLB, Albany contains 26 PSCs, and of these, 14 required an RI/FS, 10 are in site screening, and 2 are being addressed under RCRA. The 14 PSCs requiring an RI/FS were divided up into 5 individual OUs to address surface and subsurface soil, surface water and sediment. OU 6 addresses basewide groundwater at MCLB, Albany. The list below identifies the PSCs within each OU and presents the regulatory status of each:

- OU 1 - composed of PSCs 1, 2, 3, and 26; completed ROD in August 1997.
- OU 2 - composed of PSC 11; completed ROD in September 1996.
- OU 3 - composed of PSCs 16 and 17; completed ROD in August 1997.
- OU 4 - composed of PSCs 6, 10, 12, 13, and 22; currently in RI phase.
- OU 5 - composed of PSCs 8 and 14; subject of this ROD.
- OU 6 - basewide groundwater; currently in RI phase.

The selected response for OU 1 consisted of two remedies: PSCs 1 and 2 required No Action (NA), and PSCs 3 and 26 required institutional controls. Under the NA response, no treatment, containment, or restricted access was required at PSCs 1 and 2 to protect human health and the environment. Land-use restrictions (institutional controls) were implemented at PSCs 3 and 26.

The selected remedy for OU 2 was NA, and OU 3 had individual remedies for each of the PSCs. PSC 16 required institutional controls, and PSC 17 required NFRAP. The draft Remedial Investigation and Risk Assessment report for OU 4 was published in September 1995 (ABB-ES, 1995a). The final draft version is scheduled for November 1997.

The final response for OU 5 is NFRAP for all soil, surface water, and sediment. This response requires no further remedial treatment, containment, or land-use restrictions be implemented at PSCs 8 and 14. All potential exposure risks to soil, surface water, and sediment to human health and the environment were deemed acceptable by the USEPA Region IV. The final OU 5 response was selected after the public comment period ended on November 4, 1997. Groundwater beneath OU 5 will be addressed under a separate and ongoing basewide groundwater investigation, which has been designated at OU 6.

These response actions were concluded in accordance with the NCP and USEPA regulatory guidance for Superfund sites. The groundwater at MCLB, Albany is the principal, potential threat remaining at MCLB, Albany. OU 6 is being addressed under an ongoing basewide investigation. A final workplan for additional data acquisition is scheduled for January 1998.

5.0 SUMMARY OF SITE CHARACTERISTICS

This section summarizes the regional geology, hydrogeology, and ecology in the vicinity of MCLB, Albany. The nature and extent of contaminants is also presented for OU 5. A more detailed presentation of this information is available in the RI/BRA report for OU 5 (ABB-ES, 1997).

5.1 GEOLOGY. MCLB, Albany is located in the Coastal Plain Physiographic Province, which is made up of layers of sand, clay, sandstone, and limestone. These layers of soil and rock extend to a depth of at least 5,000 feet bls. Each layer has been identified and named by geologists according to its composition and physical properties.

The soil and rock layers at MCLB, Albany, in descending order, are the clayey overburden, the Ocala Limestone, and the Lisbon Formation. The overburden layer is made up mostly of clay with some silt and sand. The Ocala Limestone is divided into an upper unit and a lower unit. The upper unit is a lime mud or chalky paste. The lower unit is hard, dense rock that has been dissolved by the movement of water along fractures to form underground caves and springs. The Lisbon Formation is a hard, clayey limestone. These are the soil and rock layers that control the movement of underground water in the first 350 feet bls at MCLB, Albany. Figures 5-1 and 5-2 present a generalized geologic section of the Albany area.

The undifferentiated overburden was encountered at thicknesses varying between 30 feet and 48 feet at OU 5. The deepest boring at OU 5 was drilled to 57 feet bls. Only the upper unit of the Ocala Limestone was encountered.

5.2 HYDROGEOLOGY. Soil and rock layers are also grouped and named according to how water moves through them. Layers that bear water to wells are called aquifers, and layers that cannot bear water are called confining layers. The clayey overburden and the upper unit of the Ocala Limestone are considered together to be a confining layer. The lower unit of the Ocala Limestone is the major water-bearing zone of the Floridan aquifer. The Lisbon Formation forms a confining layer beneath the Floridan aquifer.

The Floridan aquifer is recharged by rainfall that slowly percolates down through the confining units and through sinkholes. Movement of water in the Floridan aquifer is generally west toward the Flint River, where it discharges to the river through springs (Figure 5-3).

Most irrigation wells and household water wells near MCLB, Albany draw water from the Floridan aquifer. City water wells may also draw water from the Floridan aquifer, although most of the city water is produced from deeper aquifers.

5.3 ECOLOGY. The majority of forested land in the vicinity of the base is vegetated with longleaf pine flatwoods, the most extensive plant community in the southern coastal plain. Pine flatwoods grow in Florida, Georgia, South Carolina, and North Carolina.

The pine flatwoods habitat commonly found at MCLB, Albany supports diverse plant and animal life, including invertebrates (e.g., insects and worms), reptiles, and amphibians. A number of mammals inhabit the pine flatwoods community, although no mammal is exclusive to this habitat. Pine flatwoods also provide habitat for a variety of birds, including seed and insect eaters, flycatchers, and aerial predators (e.g., owls and hawks).

The presence of two rare and threatened species has been confirmed at the base. The American

alligator (*Alligator mississippiensis*), now classified as threatened, has been documented in wetland habitats at the base; this semi-aquatic species is present throughout the southeast. Bachman's sparrow (*Aimophila aestivalis*), a State and federally listed "rare" species, is also a possible resident of the dry, open pine forests at MCLB, Albany; this large, secretive sparrow is a year-round resident of southern Georgia. The red-cockaded woodpecker (*Picoides borealis*), a federally listed endangered species, occurs almost exclusively within this pine flatwoods habitat; however, there are no known records for this species at MCLB, Albany.

5.4 NATURE AND EXTENT OF CONTAMINANTS. The nature, extent, and concentration of hazardous substance contamination at OU 5 was studied during an RI conducted between 1994 and 1997. Potentially hazardous substances detected at OU 5 and the media affected are listed in tables below by PSC and media sampled and analyzed. Concentrations of analytes detected by laboratory analyses are reported in micrograms per kilogram ($\mu\text{g/kg}$) or milligrams per kilogram (mg/kg) for soil samples and micrograms per liter for water samples. For instance, a concentration of 8,600 mg/kg for iron means that 8,600 milligrams of iron are present in each kilogram of soil. A kilogram is a unit measure of weight equal to about 2.2 pounds. One thousand micrograms equal 1 milligram, 1,000 milligrams equal 1 gram, and 1,000 grams equal 1 kilogram. A liter is a unit measure of volume roughly equal to a quart.

5.4.1 PSC 8, Grit Disposal Area Sampling results for surface and subsurface soil at PSC 8 are presented in Tables 5-1 and 5-2, respectively. As previously mentioned, grit material at PSC 8 was removed during the IRA in 1996 and is, therefore, not included in these data. No surface water or sediment was present at PSC 8. No other sources or potential sources of contamination were identified at PSC 8. Groundwater beneath OU 5 will be addressed as part of the ongoing investigation of OU 6.

5.4.2 PSC 14, Domestic Wastewater Treatment Plant Sampling results for surface and subsurface soil, surface water, and sediment at PSC 14 are presented in Tables 5-3 through 5-5, respectively. No other sources or potential sources of contamination were identified at PSC 14.

5.4.3 Contaminant Delineation at OU 5 This subsection is a summary of contaminants detected at OU 5. This analytical information is post-IRA and in conformance with USEPA's Level IV DQOs.

VOCs. Carbon disulfide and total xylenes observed at OU 5 are apparently not site related given that they were also detected in the background surface soil samples at similar concentrations. Total xylenes were also detected in one background subsurface soil sample. Chloroform was observed in one shallow subsurface soil sample (14B00107) and four subsurface soil samples (14B00135, 14B00235, 14B00440, and 14B00540) in the vicinity of a chlorine dosing manhole at the DWTP (Figure 2-1). Chloroform present in the deep subsurface soil samples probably resulted from vertical migration beneath the chlorine dosing manhole and horizontal migration via groundwater. Observations show that chloroform has been delineated at OU 5 for all nongroundwater media except for deep subsurface soil, specifically near the vicinity of the seasonal water table. Chloroform in groundwater will be addressed under OU 6, an ongoing basewide groundwater OU. Acetone and methylene chloride were also detected in subsurface soil samples collected at PSC 14. These compounds are apparently not related to the site for the following reasons: (1) they are randomly distributed in PSC 14 subsurface soils, (2) there is no historical evidence of their release, and (3) they commonly occur as artifacts in the sampling and analytical process.

Table 5-1
Analytes Detected in PSC 8 Surface Soil (Post-IRA)

Analyte	Frequency of Detection 1	Range of Detected Concentrations	Mean of Detected Concentration 2	Background Screening Concentration 3
Volatile, Organic Compounds (Ig/kg)				
Carbon disulfide	1/4	4 2.5	2.5	NA
Xylenes (total)	2/4	1 to 1	1	NA
Pesticides and PCBs (Ig/kg)				
4,4'-DDE	2/4	4 1.9 to 7.2	4.6	NA
4,4'-DDT	1/4	4 2.9	2.9	NA
Inorganic Analytes (mg/kg)				
Aluminum	4/4	5,800 to 8,120	6,769	12,718
Arsenic	4/4	1 to 1.3	1.1	5.8
Barium	4/4	28.8 to 71.2	48.4	74.4
Beryllium	4/4	0.09 to 4 0.16	0.14	0.52
Cadmium	1/4	1.5	1.5	1.4
Calcium	4/4	4 204.5 to 4,060	1,592	570
Chromium	4/4	4 4.95 to 52.9	20.9	28.2
Cobalt	4/4	1.1 to 4.6	2.5	6.8
Copper	1/4	9.9	9.9	5.8
Iron	4/4	4 3,155 to 10,200	6,159	15,748
Lead	4/4	4 8.4 to 20.6	13.8	23.6
Magnesium	4/4	4 163 to 3,510	1,338	212
Manganese	4/4	232 to 362	300	1,346
Nickel	4/4	2.2 to 4.7	3.5	8.0
Potassium	3/4	4 291.4 to 4,030	1,954	330
Vanadium	4/4	11.2 to 22.9	16.8	43.8
Zinc	3/4	14.8 to 58	38.5	10.4

- 1 Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed. The samples analyzed include samples 08S0100, 08S0200, 08S0400, and 08S0500. 08S0100D is a duplicate sample of 08S0100.
- 2 The mean of detected concentrations is the arithmetic mean concentration of all samples in which the analyte was detected.
- 3 Twice the arithmetic average of inorganic analyte concentrations detected in a basewide background sample population.
- 4 Value is the average of a sample and its duplicate.

Notes: PSC = potential source of contamination.

IRA = interim remedial action.

µg/kg = micrograms per kilogram.

NA = not available.

PCB = polychlorinated biphenyl.

DDT = dichlorodiphenyltrichloroethane.

DDE = dichlorodiphenyldichloroethene.

mg/kg = milligrams per kilogram.

Table 5-2
Analytes Detected in PSC 8 Subsurface Soil (Post-IRA)

Analyte	Frequency of Detection 1	Range of Detected Concentrations	Mean of Detected Concentrations 2	Background Screening Concentration 3
Volatile Organic Compounds (Ig/kg)				
Xylenes (total)	1/3	4 3.25	3.3	NA
Semivolatile Organic Compounds (Ig/kg)				
Benzo(a)anthracene	1/13	4 89.5	89.5	NA
Benzo(a)pyrene	1/12	4 79	79	NA
Butylbenzylphthalate	1/3	4 105.5	106	NA
Chrysene	1/13	4 63	63	NA
Diethylphthalate	1/3	4 107.5	108	NA
Fluoranthene	2/13	53 to 4 175	114	NA
Indeno(1,2,3-cd)pyrene	1/12	4 114	114	NA
Phenanthrene	1/13	4 84	84	NA
Pyrene	3/13	42 to 4 165	84.7	NA
Pesticides and PCBs (Ig/kg)				
Aroclor-1254	1/13	4 34.5	34.5	NA
Aroclor-1260	2/13	4 35 to 70	52.5	NA

Inorganic Analytes (mg/kg)

Aluminum	3/3	1,220 to 9,900	5,000	29,464
Barium	3/3	4 5.2 to 14.8	10.3	137
Beryllium	2/3	0.22 to 0.23	0.23	5.4
Calcium	3/3	85 to 4 1,274.5	485	54,532
Chromium	3/3	4 6.95 to 13.6	10.7	49.8
Cobalt	1/3	4 2.775	2.8	41.8
Copper	1/3	4 0.47	0.47	37.8
Iron	3/3	1,410 to 6,210	3,393	53.954
Lead	14/14	4 1.85 to 30.9	13.5	36.6
Magnesium	3/3	4 57.15 to 127	101	1,484
Manganese	3/3	8.7 to 75.2	33.7	2,716
Nickel	2/3	3.1 to 4.6	3.9	51.6
Selenium	1/3	1	1	0.88
Vanadium	3/3	4 20.75 to 48	35	141
Zinc	3/3	4 1.95 to 3.4	2.9	121

- 1 Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed. The samples analyzed include samples 08B00205, 08B00305, 08B00405, 08B00505, 08B00604, 08B00704, 08B00804, 08B01005, 08B01101, 08B01201, 08B01301, 08B01601, 08B01701, 08B02004, and 08B02101 (plus the duplicates of 08B00205, 08B00505, and 08B02101).
- 2 The mean of detected concentrations is the arithmetic mean concentration of all samples in which the analyte was detected.
- 3 Twice the arithmetic mean of inorganic analyte concentrations detected in a basewide background sample population.
- 4 Value is the average of a sample and its duplicate.

Notes: PSC = potential source of contamination.

IRA = interim remedial action.

µg/kg = micrograms per kilogram.

NA = not available.

PCB = polychlorinated biphenyl.

mg/kg = milligrams per kilogram.

Table 5-3
Analytes Detected in PSC 14 Surface Soil and Sediment

Analyte	Frequency of Detection 1	Range of Detected Concentrations	Mean of Detected Concentrations 2	Background Screening Concentration 3
Volatile Organic Compounds (Ig/kg)				
Carbon disulfide	11/17	2 to 17	5.3	NA
Xylenes (total)	11/17	1 to 11	4.8	NA
Semivolatile Organic Compounds (Ig/kg)				
4-Chloroaniline	1/17	63	63	NA
Benzo(a)anthracene	2/17	28 to 66	47	NA
Benzo(a)pyrene	2/17	34 to 64	49	NA
Benzo(b)fluoranthene	3/17	20 to 68	43.7	NA
Benzo(g,h,i)perylene	3/17	23 to 48	33	NA
Benzo(k)fluoranthene	2/17	41 to 51	46	NA
Chrysene	3/17	25 to 68	46.3	NA
bis(2-Ethylhexyl)phthalate	1/17	350	350	NA
Fluoranthene	3/17	29 to 150	79	NA
Indeno(1,2,3-cd)pyrene	3/17	19 to 46	30.3	NA
Phenanthrene	2/17	25 to 86	55.5	NA
Pyrene	3/17	29 to 110	61.3	NA
Pesticides and PCBs (Ig/kg)				
4,4'-DDD	1/17	11	11	NA
4,4'-DDE	14/17	1.6 to 76	16	NA
4,4'-DDT	5/17	6.1 to 28	13.2	NA
Aroclor-1260	3/17	33 to 64	48.3	NA
alpha-Chlordane	3/17	3.6 to 6.2	5.3	NA
gamma-Chlordane	3/17	3.3 to 5.3	4.3	NA
Dieldrin	1/17	9.4	9.4	NA
Endosulfan sulfate	2/17	19 to 25	22 NA	

Inorganic Analytes (Ig/kg)

Aluminum	18/18	1,100 to 15,400	9.155	12,718
Arsenic	15/18	4 1.4 to 3.2	2.2	5.8
Barium	18/18	12.3 to 65.3	28.1	74.4
Beryllium	17/18	0.04 to 0.56	0.19	0.52
Cadmium	6/18	0.72 to 5.2	2.5	1.4
Calcium	18/18	4 162 to 2.150	608	570
Chromium	18/18	4 7.15 to 123	33.7	28.2
Cobalt	17/18	0.42 to 6.5	1.8	6.8
Copper	7/18	7.6 to 37.8	20	5.8
Iron	18/18	1,780 to 23,100	11,641	15,748
Lead	18/18	4 5.2 to 50.4	14.8	23.6
Magnesium	18/18	70.1 to 955	273	212
Manganese	18/18	10.7 to 325	142	1,346
Mercury	5/18	0.03 to 0.16	0.1	0.1
Nickel	13/18	2.4 to 8.3	4.3	8.0
Potassium	12/18	90.2 to 834	249	330
Selenium	2/18	0.54 to 0.58	0.56	1.66
Silver	5/18	1 to 7.6	3.5	1.36
Sodium	1/18	15.3	15.3	114.8
Thallium	5/18	0.35 to 0.4	0.37	0.34
Vanadium	18/18	3.1 to 65.7	37.1	43.8
Zinc	12/18	2.7 to 141	37.1	10.4

1 Frequency of detection is the number of samples in which analyte was detected divided by the total number of samples analyzed. The samples analyzed include samples 14D01, 14S00100 through 14S0013 (plus the duplicate 14S0080D), 14S001500, 14S001600, 14S01, and 14S02. The sample from 14S009 was not analyzed for volatile organic compounds, semivolatile organic compounds, or pesticides.

2 The mean of detected concentrations is the arithmetic mean concentration of all samples in which the analyte was detected.

3 Twice the arithmetic average of inorganic analyte concentrations detected in a basewide background population.

4 Value is the average of a sample and its duplicate.

Notes: PSC = potential source of contamination.

Ig/kg = micrograms per kilogram.

NA = not available/not applicable.

PCB = polychlorinated biphenyl.

DDD = dichlorodiphenyldichloroethane.

DDE = dichlorodiphenyldichloroethane.

DDT = dichlorodiphenyltrichloroethane.

mg/kg = milligrams per kilogram.

Table 5-4
Analytes Detected in PSC 14 Subsurface Soil

Analyte	Frequency of Detection 1	Range of Detected Concentrations	Mean of Detected Concentrations 2	Background Screening Concentration 3
Volatile Organic Compounds (Ig/kg)				
Acetone	2/13	37 to 210	124	NA
Chloroform	1/13	4	4	NA
Methylene chloride	2/13	6 to 7	6.5	NA
Xylenes (total)	2/13	4 3 to 4	3.5	NA
Semivolatile Organic Compounds (Ig/kg)				
bis(2-Ethylhexyl)phthalate	4/13	140 to 250	178	NA
Phenanthrene	1/13	28	28	NA
Pesticides and PCBs (Ig/kg)				
4,4'-DDE	1/13	3	3	NA
Endosulfan sulfate	2/13	2.7 to 13	7.9	NA

Inorganic Analytes (mg/kg)

Aluminum	13/13	6,290 to 27,800	13,525	29,464
Arsenic	5/13	4 2.05 to 6.9	4	2.4
Barium	13/13	5.4 to 29.1	12	137
Beryllium	13/13	0.12 to 0.93	0.35	5.4
Cadmium	6/13	0.79 to 3.3	1.6	9.8
Calcium	9/13	167 to 8,650	1,618	54,532
Chromium	13/13	11.3 to 78.7	27	49.8
Cobalt	10/13	0.72 to 7.8	3	41.8
Copper	4/13	1.9 to 24.7	8.8	37.8
Iron	13/13	6,530 to 136,000	34,080	53,954
Lead	13/13	3.9 to 15.1	7.7	36.6
Magnesium	11/13	83.5 to 256	144	1,484
Manganese	13/13	4 11.75 to 118	54.3	2,716
Nickel	11/13	2.3 to 24.1	6.5	51.6
Potassium	4/13	101 to 242	157	1.396
Selenium	3/13	4.49 to 0.68	0.57	0.88
Sodium	1/13	26	26	195.4
Vanadium	13/13	44.3 to 240	96.3	141
Zinc	8/13	2.7 to 30.2	11.7	121

1 Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed, The samples analyzed include, samples 14B001 to 14B005 (plus duplicate of 148005), 14B006 to 14B011 (plus duplicate of 14B009), and 14B013 to 14B015.

2 The mean of detected concentrations is the arithmetic mean concentration of all samples in which the analyte was detected.

3 Twice the arithmetic mean of inorganic analyte concentrations detected in a basewide background sample population.

4 Value is the average of a sample and its duplicate.

Notes: PSC = potential source of contamination.

µg/kg = micrograms per kilogram.

NA = not available/not applicable.

PCB = polychlorinated biphenyl.

DDE = dichlorodiphenyldichloroethene.

mg/kg = milligrams per kilogram.

Table 5-5
Analytes Detected in PSC 14 Surface Water

Analyte	Frequency of Detection 1	Range of Detected Concentrations	Mean of Detected Concentrations 2	Background Screening Concentration 3
Pesticides and PCBs (Ig/l)				
Endosulfan sulfate	2/2	4 0.199	0.19	NA
Inorganic Analytes (Ig/l)				
Aluminum	2/2	4 424.5	425	NA
Barium	2/2	4 15.7	15.7	NA
Calcium	2/2	4 4,830	4,830	NA
Copper	2/2	4 3.55	3.6	NA
Iron	2/2	4 394	394	NA
Lead	1/2	4 1.35	1.4	NA
Magnesium	2/2	4 1,315	1,315	NA
Manganese	2/2	4 26.85	26.9	NA
Potassium	2/2	4 3,355	3,355	NA
Sodium	2/2	4 217	217	NA

1 Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed. The samples analyzed include sample 14W001 (plus the duplicate 14W0 010).

2 The mean of detected concentrations is the arithmetic mean concentration of all samples in which the analyte was detected. It does not include those samples in which the analyte was not detected.

Background data are unavailable for surface water.

Value is the average, of a sample and its duplicate.

Notes: PSC = potential source of contamination.

PCB = polychlorinated biphenyl.

Ig/l = micrograms per liter.

NA = not available/not applicable.

SVOCs. After the IRA, soil samples with total polynuclear aromatic hydrocarbon (PAH) concentrations below 1,000 Ig/kg were observed to be present in the vicinity of the former trench-and-spoil pile at PSC 8. The highest individual PAH concentration, fluoranthene, was detected at 175 Ig/kg. At PSC 14, five isolated soil sample locations (three surface soil and two subsurface soil) were observed to contain total PAHs with individual concentrations up to 150 Ig/kg. Only one PAH compound was observed in each of these PSC 14 subsurface soil samples. One occurrence of 4-chloroaniline at 63 Ig/kg was detected in the former sludge drying beds. Bis(2-ethylhexyl)phthalate was detected in seven subsurface soil samples and one sediment sample at PSC 14. Two of the subsurface soil samples were collected outside of the PSC boundary; therefore, the occurrences of bis(2-ethylhexyl)phthalate are isolated and do not appear to be site related.

Pesticides and PCBs. Except for the material removed during the IRA, all pesticides identified in samples collected at OU 5 were observed to be present in concentrations less than 80 Ig/kg. Pesticides were also detected in the background locations at concentrations up to 140 Ig/kg. Pesticides are likely due to historical widespread application in the pecan groves near the DWTP and grit accumulation. After the IRA, PCBs with concentrations up to 70 Ig/kg were detected in samples collected in the vicinity of the former trench-and-spoil pile at PSC 8. Aroclor-1260 was also observed at PSC 14 in two surface soil samples and the sediment sample at a maximum concentration of 64 Ig/kg. These PCBs are apparently attributed to past sludge removal practices.

Inorganic Analytes. Elevated concentrations of four inorganic analytes at PSC 8 (barium, lead, magnesium, and zinc) can be attributed to grit and periodic cleaning of the DWTP trickling stones and appear to be confined to the PSC 8 area in surface samples only. Elevated concentrations of five inorganic analytes (calcium, iron, magnesium, vanadium, and zinc) at PSC 14 appear to be primarily concentrated in surface soil in and around the sludge drying-beds apparently due to sludge maintenance activities. Elevated concentrations of eight inorganic constituents were also detected in the sediment sample (14D01). Of the eight, six had concentrations greater than the upgradient surface soil samples (14S01 and 14S02), indicating that sedimentation occurred in this area of intermittent ponding from former sludge drying-bed maintenance activities.

6.0 SUMMARY OF SITE RISKS AND INTERIM RESPONSE ACTIONS

The OU 5 RI analytical data were evaluated to determine whether the individual compounds were site related (i.e., resulting from historical waste disposal practices) or consistent with base background data. Based on this evaluation, a list of chemicals of potential concern (CPCs) was developed for each medium investigated at OU 5. Tables 6-1 and 6-2 present the CPCs for each PSC and medium. These CPCs were then evaluated within the BRA to determine the need for a response action.

6.1 COMPLETED IRAS AT PSC 8. After a review of the OU 5 RI data, an IRA was implemented to reduce potential human health and ecological exposure risks from grit at PSC 8. To prepare for the IRA, a focused feasibility study (FFS) was completed in April 1995. The FFS included identification of applicable or relevant and appropriate requirements (ARARs), identification of treatment alternatives and comparison with the nine USEPA criteria (including compliance with ARARs). The treatment alternatives for the PSC 8 IRA included (1) no action; (2) capping; (3) excavation, followed by incineration and disposal; and (4) excavation, followed by off-base stabilization and disposal at a Toxic Substance Control Act (TSCA) landfill.

Table 6-1
Chemicals of Potential Concern at PSC 8
Human Health and Ecological Risk Assessment

Chemicals	Human Health	Ecological
	Surface Soil	Surface Soil
Carbon disulfide		x
Xylenes (total)		x
4,4'-DDE		x
4,4'-DDT		x
Cadmium		x
Chromium	x	x
Copper		x
Zinc		x

Note: PSC = potential source of contamination.

DDE = dichlorodiphenyldichloroethene.

DDT = dichlorodiphenyltrichloroethane.

DDD = dichlorodiphenyldichloroethane.

Table 6-2
Chemicals of Potential Concern at PSC 14
Human Health and Ecological Risk Assessment

Chemicals	Human Health		Ecological	
	Surface Soil and Sediment	Subsurface Soil	Surface Soil and Sediment	Surface Water
Carbon disulfide			x	
Xylenes (total)			x	
4-Chloroaniline			x	
Benzo(a)anthracene			x	
Benzo(a)pyrene			x	
Benzo(a)pyrene			x	
Benzo(b)fluoranthene			x	
Benzo(g,h,i)perylene			x	
Benzo(k)fluoranthene			x	
Chrysene			x	
bis(2-Ethylhexyl)phthalate			x	
Fluoranthene			x	
Indeno(1,2,3-cd)pyrene			x	
Phenanthrene			x	
Pyrene			x	
4,4'-DDD			x	
4,4'-DDE			x	
4,4'-DDT			x	
Aroclor-1260			x	
alpha-Chlordane			x	
gamma-Chlordane			x	
Dieldrin			x	
Endosulfan sulfate			x	x
Aluminum	x		x	x
Arsenic		x		
Barium				x
Beryllium	x		x	
Cadmium	x		x	
Chromium	x		x	
Copper			x	
Iron	x	x	x	

See notes at end of table.

Table 6-2 (Continued)
Chemicals of Potential Concern at PSC 14
Human Health and Ecological Risk Assessment

Chemicals	Human Health		Ecological	
	Surface Soil and Sediment	Subsurface Soil	Surface Soil and Sediment	Surface Water
Lead			x	x
Manganese				x
Mercury			x	
Nickel			x	
Silver			x	
Thallium			x	
Vanadium	x		x	
Zinc			x	

Notes: PSC = potential source of contamination.

DDD = dichlorodiphenyldichloroethane.

DDE = dichlorodiphenyldichloroethene.

DDT = dichlorodiphenyltrichloroethane.

The IRA Proposed Plan was published in the Albany Herald and the Atlanta Constitution newspapers on April 25, 1995. The IRA Proposed Plan summarized the FFS and recommended excavation, followed by off-base stabilization and disposal at a TSCA landfill. A public comment period followed and a Public Meeting was held in May 1995, at MCLB, Albany. The ARARs, identification and evaluation of alternatives, and the selected remedy for the IRA are summarized in the IRA ROD (ABB-ES, 1995b). The IRA was performed in January and February 1996 and involved excavation of 79 cubic yards of contaminated grit and soil from the PSC 8 trench area followed by off-base treatment and disposal at a TSCA landfill.

6.2 OU 5 BRA. A BRA was prepared for post-IRA conditions at OU 5 in accordance with the USEPA Risk Assessment Guidance (USEPA, 1988). This guidance reflects a conservative approach to risk assessment to ensure that subsequent cleanup decisions are protective of human health and the environment. The BRA estimates or characterizes the potential present and future risks to human health and the environment. Three factors were considered when evaluating the risks associated with OU 5:

- The extent of contamination present at the site and surrounding areas.
- The pathways through which people and the environment are or may potentially be exposed to contaminants at the site.
- The potential toxic effects of site contaminants on humans and the environment.

Exposure pathways considered for the human health portion of the BRA include ingestion, skin contact, and inhalation. These pathways were then applied to a current land-use scenario in which an older child trespasses on OU 5. A theoretical future land use of OU 5 involving residential development and associated utility construction was also considered.

The human health portion of the BRA evaluated both the potential cancer and noncancer risks for each exposure scenario. According to the NCP for Superfund sites, the acceptable cancer risk range is from 1 in 10,000 (1×10^{-4}) to 1 in 1 million (1×10^{-6}) depending on site-specific conditions. Although the estimated risk of 1×10^{-6} is the point of departure in determining the need for a response action, site-specific conditions at OU 5 indicate that application of the acceptable risk range is appropriate. Site-specific conditions at OU 5 supporting use of the risk range include the base perimeter fence restricting public access to soils, surface water, and sediment; the industrial site conditions; and the low probability of receptor contact with contaminated soils. For noncancer risks, the similar point of departure is a hazard index (HI) greater than 1. If the total estimated noncancer risk exceeds one, then site-specific conditions and effects from individual compounds are evaluated to determine if a response is necessary.

The ecological portion of the BRA assumed that animals would be exposed directly to surface soil, surface water, and sediment with additional exposure from eating other animals and plants that may contain stored contaminants.

The OU 5 human health risk assessment and ecological risk assessment (ERA) were performed on the following media: soil, surface water, sediment, and the sludge drying-bed soil. Grit was excavated from PSC 8 prior to conducting the risk assessment and, therefore, was not evaluated in the BRA.

Table 6-3
Human Health Risk Summary for PSC 8
Operable Unit 5

Land Use	Noncancer HI	Cancer Risk
Current Land Use		
Surface Soil:		
Base Worker	0.02	3×10^{-8}
Future Land Use		
Surface Soil:		
Resident	0.1	8×10^{-8}

Notes: PSC = potential source of contamination.
 HI = hazard index.
 $3 \times 10^{-6} = 0.00000003$ or 3 in 100,000,000.

Table 6-5
Human Health Risk Summary for PSC 14
Operable Unit 5

Land Use	Noncancer HI	Cancer Risk
Current Land Use		
Surface Soil:		
Base Worker	0.2	3×10^{-4}
Future Land Use		
Surface Soil:		
Resident	0.7	7×10^{-4}
Subsurface Soil:		
Excavation Worker	0.008	6×10^{-9}

Notes: PSC = potential source of contamination.
 HI = hazard index.
 3×10^{-4} = 0.000003 or 3 in 1 million.

6.2.1 PSC 8 Table 6-3 summarizes the potential cancer and noncancer risks for each exposure scenario at PSC 8. The potential cancer and noncancer risks for a base worker, under a current land-use exposure scenario, are 3×10^{-8} and 0.02, respectively. These risks are well below the USEPA points of departure (1×10^{-6} and HI less than 1.0). Under a future residential scenario, both the cancer and noncancer risks (8×10^{-8} and 0.1) are also below the USEPA criteria. Table 6-4 summarizes chemicals identified at PSCs 8 and 14 that are potential ecological risk contributors. The PSC 8 ERA results show that adverse effects to receptor species from exposure to maximum and average exposure point concentrations (EPCs) in surface soil will be minimal. Only chromium was identified as potentially causing adverse effects to plants in a surface soil sample (08S005 at 52.9 mg/kg) on the southwestern portion of PSC 8; no analytes were identified as causing adverse effects to wildlife species or to soil invertebrates.

6.2.2 PSC 14 Table 6-5 summarizes the potential cancer and noncancer risks for each exposure scenario at PSC 14. For current land-use assumptions, base worker cancer risks for potential exposures to surface soils do not exceed the USEPA acceptable cancer risk range of 1×10^{-4} to 1×10^{-6} , and noncancer risks are below a level of concern, with HIs of less than 1. For potential future land use, resident cancer risks for surface soil are also below a level of concern, with cancer risks within the USEPA acceptable cancer risk range of 1×10^{-4} to 1×10^{-6} . Noncancer risks for potential surface soil exposures do not exceed an HI of 1 for either the child or adult resident. Cancer and noncancer risk estimates for the excavation worker are below a level of concern.

The PSC 14 ERA results show that adverse effects to receptor species from exposure to maximum and average EPCs in surface soil and/or sediment and surface water will be minimal. Aluminum, chromium, vanadium, and zinc were identified as potentially causing adverse effects to plants; however, given the history of the site, it is likely that only chromium in the sludge drying beds and the downgradient drainage ditches may cause adverse effects to terrestrial plants. Maximum exposure concentrations of several metals (including aluminum, cadmium, thallium, vanadium, and zinc) contributed to a very low risk estimate for small, insectivorous birds; treated individually, small bird exposures to any one of these metals would not result in adverse effects. Furthermore, cumulative average exposures to these metals are not likely to result in adverse effects for small, insectivorous birds. No analytes were identified as causing substantial adverse effects to soil invertebrates.

The RI/BRA report (ABB-ES, 1997) details the OU 5 RA results. The PSC 8 Remedial Action Report (ABB-ES, 1996) details the IRA. Both documents are available at the MCLB, Albany Environmental Office and Dougherty County Library.

6.3 RATIONAL FOR NFRAP. Based on the results of the BRA, an NFRAP decision is proposed for all soils, surface water, and sediment at PSCs 8 and 14. This alternative specifies no further treatment, containment, or land-use restrictions for these PSCs. Remedial alternative identification and screening was not conducted for PSCs 8 and 14 as the soil, surface water, and sediment at these sites do not pose an unacceptable threat to human health or the environment.

The proposed NFRAP response action for surface and subsurface soil, surface water, and sediment at OU 5 is based on two factors:

- removal of contaminated grit in the trench at PSC 8 in 1996, and the sludge removal followed by RCRA closure of the sludge drying beds at PSC 14 in 1994; and
- current and potential future risks (as identified in the BRA) do not exceed the USEPA acceptable risk criteria and, therefore, are protective of human health and the environment.

Further, the exposure scenarios considered in the BRA were based on conservative USEPA guidance. For example, the BRA disregarded current base access restrictions (which deter human exposure) while considering future residential use of a former DWTP.

The NFRAP alternative does not require any additional remedial construction activities or access restrictions at OU 5. This response action may be reevaluated in the future if conditions at OU 5 change and unacceptable risks result.

7.0 EXPLANATION OF SIGNIFICANT CHANGES

As lead Agency, SOUTHNAVFACENGCOM prepared and issued the Proposed Plan for OU 5 on September 5, 1997. This Proposed Plan described the rationale for a final response of NFRAP for all surface soil, subsurface soil, surface water, and sediment at OU 5. The GEPA, USEPA Region IV, and public concur with this final response. Therefore, no significant changes were made to the Proposed Plan. This response action may be reevaluated in the future if conditions at OU 5 indicate that an unacceptable risk to human health or the environment would result from exposure to the various media.

REFERENCES

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- ABB-ES. 1993. Confirmation Soil Sampling Report for the Sludge Drying Beds at the DWTP, MCLB Albany, Georgia. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (March).
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- ABB-ES. 1996. Remedial Action Post-Construction Report for Potential Source of Contamination 8, Operable Unit 5, MCLB, Albany, Georgia. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (June).
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APPENDIX A

COMMUNITY RELATIONS RESPONSIVENESS SUMMARY

1. 0 OVERVIEW

Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) held a public meeting on October 16, 1997, at Marine Corps Logistics Base (MCLB), Albany to discuss the Proposed Plan for No Further Response Action Planned at Operable Unit (OU) 5 and solicit comments and questions from the public. Three citizens attended this public meeting and expressed an interest in the process and an appreciation for the work performed by SOUTHNAVFACENGCOM and MCLB, Albany. No written comments or questions were received during the 30-day public comment period.

2.0 BACKGROUND OF COMMUNITY INVOLVEMENT

An active community relations program providing information and soliciting input has been conducted by MCLB, Albany for the entire National Priority List (NPL) site. Interviews of citizens onbase and in the city of Albany were conducted in the winter of 1990 to identify community concerns. No significant concerns that required focused response were identified. Most comments received were concerning the potential for contamination of water resources. However, those interviewed indicated that they place great trust in MCLB, Albany and their efforts to rectify past waste disposal practices. In addition, the base has formed a Technical Review Committee (TRC) that includes members representing the city of Albany, Dougherty County, and the local academic community. These TRC community members were contacted in July 1996 to determine their continued interest in serving on the committee. Each member confirmed his or her interest in serving on the TRC. In addition, parties on the MCLB, Albany Environmental Branch mailing list were contacted to solicit new community members for the TRC. Since this solicitation, the TRC has grown from 10 to 17 members. In addition, the MCLB, Albany Environmental Branch has held two meetings with the TRC (December 3, 1996 and April 8, 1997) to update them on the status of the investigation, remediation, and closure of the 26 PSCs. The local media have also been kept informed since MCLB, Albany was placed on the NPL. Installation Restoration program fact sheets have been prepared and made available at the Environmental Office of MCLB, Albany. Documents concerning OU 5 are located in the Information Repository at Dougherty County Public Library and the Administrative Record at the Base Environmental Branch office.

3.0 SUMMARY OF PUBLIC COMMENT AND AGENCY RESPONSE

3.1 PUBLIC MEETING

Twenty-three verbal questions were received during the public meeting held on October 16, 1997. Five questions pertained to the OU 5 remedial investigation and former domestic wastewater treatment plant (DWTP) operations; 1 question pertained to future DWTP operations; 15 questions pertained to the ongoing OU 6 basewide groundwater investigation; and 2 questions pertained to basewide storm-water management. Upon review of these comments, it was determined that no significant changes to the OU 5 No Further Response Action Planned remedy, as it was originally identified in the Proposed Plan, were necessary. Transcripts of the public meeting are provided in Attachment A-1 of this Responsiveness Summary.

3.2 PUBLIC COMMENT PERIOD

The 30-day public comment period was held for the OU 5 Proposed Plan from October 6 to November 4, 1997, at MCLB, Albany. No additional technical comments or questions were received during the public comment period.

ATTACHMENT A-1

**TRANSCRIPTS OF THE OCTOBER 16, 1997,
PUBLIC HEARING ON OPERABLE UNIT 5,
MARINE CORPS LOGISTICS BASE, ALBANY, GEORGIA**

PUBLIC HEARING ON OPERABLE UNIT 5
HELD AT MARINE CORPS LOGISTICS BASE, ALBANY, GEORGIA
ON THURSDAY, OCTOBER 16, 1997 AT 7 P.M.

Lt. Frantz: We have two visitors here tonight - we have Lincoln and John. And welcome. I'd like to welcome you to our public meeting where we're going to talk about Operable Unit 5 and our proposed plans for closing out those two sites that are included in Operable Unit 5.

I'd like to also welcome you on behalf of the Commanding General, Major General Gary S. McKissock. He recently--we were in the news with him signing some records of decisions for other sites. He really does support our program wonderfully. Before we go too much further, I would like to make a few introductions. At the back of the room, we have Mr. Robert Pope from United States Environmental Protection Agency Region 4, and Ms. Madeleine Kellam from Georgia Environmental Protection Division. We also have Mr. Jerry Palmer, he's my boss; he kind of oversees all the environmental activities on the base, including the installation restoration program. Behind you there is Mr. Joel Sanders from Southern Division. He takes care of a lot of the contract actions that we have with our contractor, ABB Environmental Services. And from ABB we have Mr. Joe Daniel and Ms. Kathy Hodak. We hire them because they have experts in geology, chemistry, and toxicology. You name it, they've got it.

The objectives of tonight's meeting are to review Operable Unit 5 background and site history and some of the current actions that have recently happened, present our proposed response actions which after reading the posters, you can see both response actions for both PSC 8 and 14, are no further remedial action planned -- response action planned and also to get some community input on our proposed plan to see that the community at large will agree with what we plan to do.

The location of Operable Unit 5, which consists of two sites: Potential Source of Contamination 8, which is a grit disposal area and Potential Source of Contamination 14, which is our no-longer-in-operation domestic wastewater treatment plant.

PSC 8, the grit disposal area, was used from 1962 to 1979 for disposal of grit chamber waste; it is a chamber that tends to catch some of the non-biodegradable waste that comes into the domestic wastewater treatment. And PSC 8 was an area just across a road and what they did was take grit out of the chamber and put it into that pile.

Okay, at PSC 8, during the remedial investigation, risk assessment phase, what we found at PSC 8 were polychlorinated biphenyls and polyaromatic hydrocarbons. The PAH's are typically associated with petroleum products and we also found chromium, which is a heavy metal, in the soil. These are the contaminants that drove the cleanup--or required the cleanup.

What we investigated at this site were surface soil, subsurface soil, sediment and surface water. At this particular site, there was no surface water or sediment on the site, so we didn't have to investigate those, but we did do the surface soil and subsurface soil. We did end up performing a cleanup action at PSC 8. We excavated and disposed of off-site the contaminated soil at a land fill specifically approved for receiving hazardous waste. We received approximately -- or we excavated 79 cubic yards. If anybody has any questions or needs any additional information at any time, just stop me.

Next we have PSC 14, which was our domestic wastewater treatment plant. From about 1952 to 1988, this plant processed sanitary waste coming from the base. In approximately 1977, pretreated industrial wastewater was also sent through the domestic wastewater treatment plant, which is why the plant was included in the remedial investigation phase. We also had sludge drying beds that were the end process for the domestic wastewater treatment plant; and because this plant treated industrial waste, the sludge that was the end product became a listed Resource Conservation Recovery Act waste and we were required to remove the residual sludge that was left in the pits after we closed down the system.

The investigation consisted of surface and subsurface, including video inspections of the piping that ran to the system, in which we did see some deteriorated piping. We found some PAH's in the soil and the sludge drying bed material. Chloroform was found on site, which was likely related to chlorine use in the chlorine dosing tank. And we did find some metals in surface soil in one of the seven samples. Pesticides were found on the site, but they were not in amounts higher than you would see on any other agricultural site. There was a pecan grove right next to the domestic wastewater treatment plant.

The cleanup action, as I discussed before, PSC 14 included removal of sludge from the drying beds and we did receive a clean closure certification -- or they approved our closure as we did it, including all the post removal confirmation sampling, etc.

Okay, what exactly--after all these cleanup actions and investigations and looking at the risk assessment and evaluating the risks at these sites, what is the next step? We are proposing for PSC 8 no further response action and that is because we removed the contaminated grit and addressed the human health and environmental concerns and the risk assessment found that current and potential future risks are within USEPA standards that are meant to protect human health and environment.

Similarly at Potential Source of Contamination 14, we now propose no further response actions planned, because closure of the sludge drying beds and removal of the sludge in those beds addressed the human health and environmental concerns. And again, the risk assessment found that the current and potential future risks were within USEPA standards.

Some of the things to finally consider, we have certainly taken steps to protect human health and the environment from unacceptable risks. This proposed plan addresses soil, both surface and subsurface, surface water, and sediment only. And we say only, groundwater is being handled under a separate operable unit, which is called Operable Unit 6, Base Wide Groundwater. The existing and potential risks that are found at that site at this time are within the USEPA guidelines that protect human health; and I stated, a Base-wide study of groundwater is underway. So the decisions we are making today are only for surface soil, subsurface soil, sediment, and surface water.

Q. What would the full range be in addition to soil, surface----

Surface water? Groundwater is the only other media and you can have air. Air is a media, but it is not a media of concern here at this base.

Okay, the reason you are all here is because we believe that community involvement is important. You can provide any comments, concerns, questions, anything you may have at tonight's meeting. You can send them in in regular mail. We have comment sheets in the back if you want to go home and think about it or you just don't feel comfortable saying it here. You can take these home, think about it, write it down and send it in. We do respond to every comment. You may send comments in on electronic mail, this is my E-mail address here at the base, or you may call our office and talk to myself, Mr. Palmer. You may call the state or federal regulators, I have

information for them. Their telephone information is in the environmental update which you all have a copy of.

The actual proposed plan which we also have copies of in the back and other site documents, including the remedial investigation, the risk assessment, the closure documentation for the sledge drying beds, and the removal after action reports are all available at the public library or in my office here on base. If you'd like to get more in depth, these documents are quite thick, but if you want more information or to get into the nitty gritty, you are welcome to take a look at those.

That is all I have as far as a formal presentation. Our team, which includes the federal regulators, the Navy and the Marine Corps, and ABB, who is our contractor and consultant on this -- we're all dedicated to protecting human health and the environment. That is the Marine Corps job, to protect the US, and we certainly don't want to poison the US from within. So we are here to try and fix some of those past mistakes. That's all I have.

If there are any other questions or concerns or if you haven't had a chance to look at the posters, you are welcome to come up and do that. We will be here until the last person leaves to discuss and answer questions.

Q. Are there any plans to reopen PSC 14?

No. In fact, the plans are to demolish that so the Marine Corps can save some money on maintenance. We still have to maintain our buildings if they are there, so we are going to go ahead and tear it down.

Q. When will the groundwater testing start?

The groundwater testing is underway. The US Geological Survey is scheduled to complete their report mid-November. We have--we being the Navy and ABB have completed a preliminary review of our site of that same investigation. Right now we are in the phase where we are trying to figure out what kind of information we have, what kind of questions can be answered with that, and what kind of data we need to make the final decisions. So we are rolling up all the data that we've got so far, finding out where we're at, and then we'll go from there to find out what other information we need to make decisions that are protective of human health and the environment.

Q. So we can expect a meeting, then, right before Thanksgiving?

No. When I say when we are in that stage, we have not completed--we have not started the remedial investigation and risk assessment portion of that, which generally takes about the longest. So right now we are gearing up to get into the main investigation, you might say.

Q. Do you expect by March of next year, perhaps?

Lt. Frantz: What is our schedule, Joe?

J. Daniel: We expect to be meeting with the regulators in December to discuss the information we've presented so far, pertaining to groundwater, address data gaps there. And then from there we will develop a work plan for the next stage of the remedial investigation of groundwater and hope to get in the field in January or February to proceed with that. We have several months of field work; be sampling water wells, installing new wells, hope to conclude that by May of next year and then we'll get into the report findings.

Q. So are you going to monitor some of the residents wells along this road here?

J. Daniel: Currently, we are just working on base, if there is any contamination here.

Lt. Frantz: And, Joe, that's right near PSC 3, the Branch Road, we do have wells that we sample off base. That's part of the Base-wide groundwater investigation. And in fact we have a quarterly sampling event and every six months we write a report to the state and federal environmental protection agency.

Q. Essentially, does the groundwater move in this direction toward the river, diagonally from this area?

J. Daniel: The hydro-geologic framework here is very complicated and it is hard to say that in one area it all flows in one direction, depending on where you are in the subsurface, it can flow a lot of different directions. In general though, the regional flow is toward the Flint River, westwardly.

Q. Is there any recharge sites in this plane here?

J. Daniel: Yes, the Dougherty plane, the whole plane is considered a recharge area for the Floridan aquifer.

Q. Is the canal, which I think is Dry Creek? Does Dry Creek----

Lt. Frantz: Marine Canal? The Marine Canal is the one that takes all of our storm water runoff to the Flint River--directly to the Flint River.

Q. The Dry Creek -- Piney Woods Creek, does that flow through?

Lt. Frantz: The upper northwest.

J. Daniel: You can see on the map up there, the blue line that snakes across the Northwest corner -- it flows north up to the reservoir, which is a different part of the Flint River.

Q. You all have a test well somewhere right in there, don't you?

Lt. Frantz: Yeah, right next to it. And that well, these wells that you see here were purposely put in these areas because we are almost positive they're clean. What they are is US Geological Survey, we put these in for them so they could do their investigation. So the reason those were put where they are at is because we suspect that to be completely clean.

Q. When you all test these wells, what kind of chemicals are you looking for?

Lt. Frantz: 173 chemicals?

J. Daniel: Yeah, there are 170 odd different analytes that we test for.

Lt. Frantz: Including volatile organic compounds, semi-volatile organic compounds, pesticides and PCB's and inorganic analytes, such as metals.

Q. So all of these would be just to get a base-line of what's there?

Lt. Frantz: That and the USGS wants to get a handle on how the hydro-geology and the system --the hydro-geologic system beneath this base works. They took quite a few samples at different depths to find out what the hydraulic conductivities were, both vertical and horizontal. They want to try and get a feel for how the groundwater works under the base. And we'll need--the information they are trying to gather--in a situation like this, it is important to understand

where your contaminants are now, where they're going, and how fast they're getting there so that you can do something to protect human health and the environment in the event it goes off-Base.

M. Kellam: You might point out that the USGS wells are to understand the flood system, but there are a lot of other monitoring wells. Somebody from ABB could probably give you the number of monitoring wells that are also on the base.

Lt. Frantz: 277. And for the most part, every one of those wells have been sampled more than once -- at least once, but many of them more than once. We have an entire network of wells across the base to track what is in those. And we have wells in the residuum or shallow wells, we have wells in the upper section of the upper Floridan aquifer, and that's a little different hydro-geologic structure than the lower water bearing zone of the same aquifer. So we have wells in all three of those zones. We have wells of all kinds of all shapes, of all depths.

Q. Have you all noticed that you all have subsurface and fresh water tables in this area?

J. Daniel: There are some zones where we get perched water.

Lt. Frantz: For the most part, the residuum is composed mostly of clay.

J. Daniel: Generally the wells that are installed in the upper layer, that's sandy clay at the surface and then at depths of about 45 feet or so it's a very highly plastic clay. So that has --we've seen water perched there at times.

Lt. Frantz: In general during the dry season, like it is now, we won't find any water in any of the residuum wells, in any of the top-most layer wells. But during rainy season, we do find some water in those.

Q. Tell me about the video inspection for PSC 14, what was that about?

Lt. Frantz: They ran a little video camera, they pulled it through a pipe and this video camera took pictures of the inside of the pipe so that we could determine where there was a break or a crack or a leak and in fact they used that data to help guide their sampling, did you not?

J. Daniel: Yes.

Lt. Frantz: Anywhere we found a crack in the pipe or a hole in the pipe or any irregularity in the pipe where it looked like it might leak water out, ABB took samples from that area to find out if we had any leaks that caused contamination.

Q. And pretreatment of the industrial waste, what is that?

Lt. Frantz: We have the central wastewater treatment plant receives industrial waste from the maintenance center, the Defense Maintenance Agency - they change their name every once and a while.

J. Palmer: The Maintenance Center-Multi-Commodity Maintenance Center; they rebuild tanks and trucks and so on.

Lt. Frantz: From that industrial activity, they receive industrial waste, which includes waste from chrome plating activities, from aluminum--they call it aluminum conversion activities --

J. Palmer: Blast grit, solvents from painting, grease, oil, acids from batteries.

Lt. Frantz: The industrial wastewater that they receive is pretty nasty. It has a treatment system composed of----

J. Palmer: We just changed over to ferrous sulfate treatment process that really cleans up--we changed over about 3 months ago and the affluent testing is much better, to the tune of about 300% better.

Lt. Frantz: What this treatment plant does, it raises and lowers the Ph of the water when they raise the Ph, it starts the metal coagulating and settling down and that stuff is pulled out and they raise it back up again. I'm not a wastewater treatment plant specialist, but they use chemicals to draw out the metals and other things in there. There is an aeration basin. Floc tanks--flocculation tanks, and then it goes into--the sludge goes into above ground sludge drying beds that are not in any way hooked to the soil and once the sludge is dried up then it's put in containers and shipped off to a waste facility that accepts that. It is a RCRA waste, a Resource Conservation and Recovery Act waste. So we have to pay to get rid of it and it is put in special landfills specially designed to accept these kind of wastes. And then the wastewater--the pretreated wastewater goes into the City of Albany publicly owned treatment plant; Albany's Wastewater Treatment Plant. But before it goes there it is routinely tested by the City. We actually have to pay the city to test our water so that they make sure our water does not contain levels of contamination that their wastewater treatment plant can't handle. And so that we don't end up with a similar situation out in town.

Lt. Frantz: We certainly expect a lot more interest when we have the public meeting about ground water. These sites that we're taking care of now, when you can dig something out of the ground and clean up the site that way, that's easy. We're gearing up for the hard stuff.

Q. Has anyone from the public--there are two subdivisions; there is one here, on the west side of the base, on the south side, there are about maybe 15 or 20 homes there.

Lt. Frantz: Yes, as a matter of fact, a gentleman by the name of Robert Freeman -- you guys know him, too -- he asked us, he said, "You know, I live right next to an NPL site and I feel that you ought to test my groundwater" because he has his own well and he also-- his well supplies several other families that rent on his property. So he asked us to sample his water and we did so.

Q. So in other words if someone concerned owns a well along this area, can we refer them to you?

Lt. Frantz: If they do have a concern specifically about our base, yes. I think -- especially, Mr. Freeman lives in about the middle of all this. And we have also tested this well, in the corner of the base, and between Mr. Freeman's house, which is right over here, and this well, their drinking water is actually in very good condition. The only thing we found in Mr. Freeman's water were nitrates and they were well below--I mean, we found nitrates but they were below MCL's.

Q. And then there is a church on down beyond Gaissett Road, do you see the church there? There are about 5 or 6 homes there. They have called us concerned about the landfill.

Lt. Frantz: Okay, the landfill that is down here?

Q. Correct. And they have expressed some concerns for having the water tested for a variety of chemicals.

Lt. Frantz: Right. One of the things that we can certainly say about this area, we don't have any potential sources of contamination anywhere near this area; and the ones that we do know

about have some groundwater contamination are located here, here, and here. So what we would probably tell them--I can't--I guess I couldn't answer that. It would have to be on a situational basis. But since Mr. Freeman and those families are right near the DMA, which is that--one of our biggest sites, and it does have a groundwater plume, we felt it prudent and the neighborly thing to do to test that water. We have to be careful because testing groundwater does cost quite a bit of money to test for all the analytes under the safe drinking water act is very expensive.

Q. There is a proposal to drill a well at the east end of the base proper there, about 300 yards from Piney Wood Creek there, the land you all sold from the base here. A man already has a permit to drill a well there. What would you advise?

Lt. Frantz: Once again, that is, that is pretty much a virgin area as far as the base is concerned. We have already tracked our known groundwater plumes, and they don't even go this way; they go more this way and up into here and back in here. So they are not-- relatively, they are not even going towards any of those people's land that you are talking about.

Q. You might want to use it for a testing well, too.

Lt. Frantz: I don't know. Would we want to use something like that for a background type well.

J. Daniel: Where is the well you are talking about?

Spectator: It is not there yet. It is going to be----

Lt. Frantz: Like I've said, we've got a network of wells all across the base.

[The spectator indicated on the map where the proposed well was to be located. There was discussion about a subdivision on land previously owned by the base.]

Q. I'm real surprised. We have had from the Health Department several phone calls in that area of concern with other matters related to the landfill. We've been to 2 or 3 of these meetings and----

Lt. Frantz: Well, the landfill, and that's the new Dougherty County landfill, right, at the end of Gaissett Road. Back in the pecan orchard back there.

Spectator: It is just south of that Morningstar Church. In fact there is a pond and I think the landfill is real close to where that pond is.

J. Daniel: Lieutenant, getting back to OU5, I think we ought to find out if there are any other questions/concerns about OU5 and wrap up that conversation and then we can pursue some of these other questions.

Lt. Frantz: That's a good idea. If there are no other questions on Operable Unit 5, Marie, you can shut down.

[There was no additional discussion on Operable Unit 5.]

The foregoing is an accurate transcript of the public meeting held at Marine Corps Logistics Base, Albany, Georgia, on Thursday, 16 October 1997, beginning at 7:00 p.m. and concluding at 7:35 p.m.

